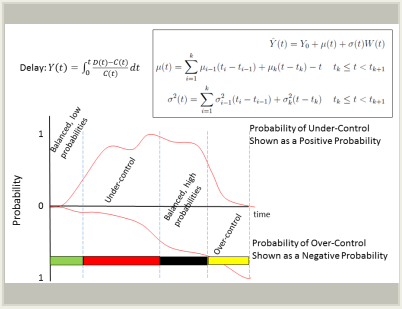
Small Business Innovation Research/Small Business Tech Transfer

Integration of Tactical Departure Scheduling and Traffic Flow Management, Phase II

Completed Technology Project (2015 - 2017)

Project Introduction

NASA's Air Traffic Management (ATM) research has produced many important, advanced decision support tools (DSTs) over the past three decades. A key challenge in the design and use of ATM DSTs is to determine how much control should be applied to the flow of traffic and at what point in the flow the control should be applied. This question can be addressed both during the initial operational ATM planning process, as well as during dynamic operations re-planning. This challenge has significant impact on the resulting effectiveness of any ATM control program that is applied, because inefficiencies can be caused by either under or over-control of the flow. Unfortunately, comprehensive DSTs don't exist for many ATM decisions that must be made, and most DSTs that do exist do not provide any guidance regarding when the control should be applied, nor do they quantify the potential risk associated with the timing of control application. An integrated decision support capability is needed to provide ATM specialists and flight operators with information to support planning and decision-making about tactical and strategic TMIs. The significant challenge that exists in providing this decision support capability is the uncertainty of prediction of both demand and capacity. The work that has been conducted in this Phase I SBIR effort, and that is proposed for continuation in Phase II, addresses this fundamental research need in ATM automation system design in the context of the integration of Tactical Departure Scheduling (TDS) with Traffic Flow Management (TFM). During Phase I, we designed, tested and conducted initial validation on mathematical and simulation models that characterize and quantify the relationship between IADS capabilities and other TMIs. These models provide guidance and input for further NASA research efforts and activities, and they will also provide real-time operational decision support for Traffic Management Coordinators (TMCs) and other ATC specialists.



Integration of Tactical Departure Scheduling and Traffic Flow Management Project Image

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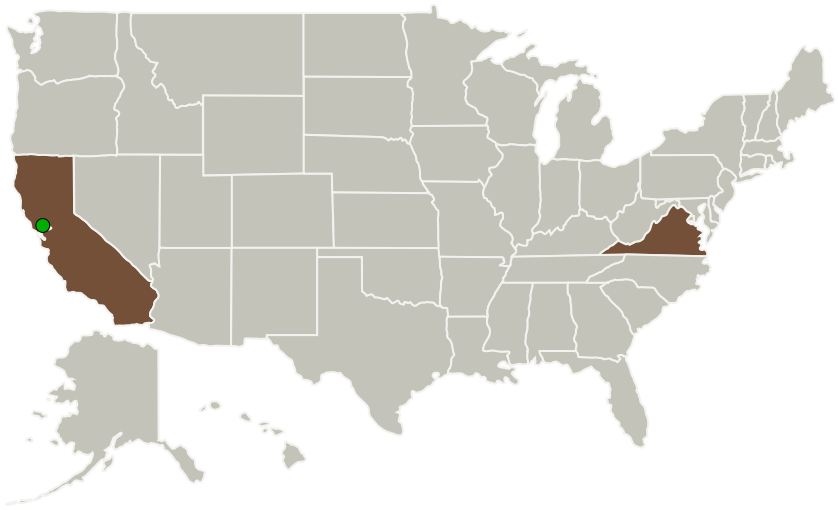
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Mosaic ATM, Inc.	Lead Organization	Industry	Leesburg, Virginia
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Virginia

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Mosaic ATM, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Chris Brinton

Co-Investigator:

Chris Brinton

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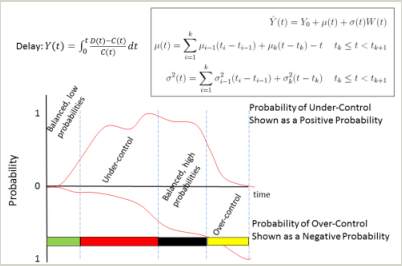
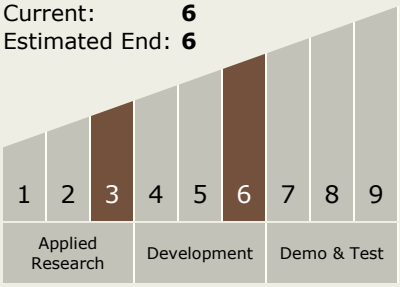
Images



Project Image
Integration of Tactical Departure Scheduling and Traffic Flow Management Project Image
(https://techport.nasa.gov/image/129086)

Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.5 Propulsion Flowpath and Interactions

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System